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TWELVE NEW SPECIES OF CHINESE LEAF-KATYDIDS
OF THE GENUS *XIPHIDIOPSIS*

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THIS paper is based on a study of 52 specimens of Chinese leaf-katydids belonging to the genus *Xiphidiopsis* in the United States National Museum, and in the Hebard collection at the Academy of Natural Sciences of Philadelphia. Only one of them was found to belong to a previously described species; the remaining 51 specimens represent 12 species new to science, several of these being represented by unique types.

Family TETTIGONIIDAE

Genus *XIPHIDIOPSIS* Redtenbacher

Xiphidiopsis REDTENBACHER, 1891, p. 531.—HEBARD, 1922, p. 273.—KARNY, 1923, p. 178; 1926, p. 130.—CHANG, 1935, p. 42.—TINKHAM, 1936, p. 410; 1941, p. —.

The genus *Xiphidiopsis* is one of several genera of small and interesting katydids comprising the subfamily Meconeminae, which Dr. H. Radcliffe Roberts (1941) has shown must be corrected to Meconematinae. The genus is remarkable for the specialization of the male supraanal plate and cerci and for the form of the female subgenital plate and eighth abdominal sternite. The cerci and supraanal plate are often of bizarre and intricate form and make the identity of males a

simple matter. Recent studies by the writer have shown that the females possess interesting specializations as well, for the subgenital plate and the eighth abdominal sternites have become adapted to the curious mating organs of the males. Thus we see that in *X. suzukii* Matsu-mura and Shiraki the subgenital plate is replaced by three pairs of downward-directed prongs. In three other species (*X. gurneyi*, *X. szechwanensis*, and *X. transversa*—all described hereinafter) the eighth abdominal sternite is specialized, and two other new species (*X. phyllocerca* and *X. emarginata*) have teeth at the apex of the ventral valvulae. Furthermore, color characteristics are identical in each sex and constant. In *X. spatulata* the dorsum of the head is reddish brown to the base of the fastigial cone, which is pale green, and in two other new species, *X. phyllocerca* and *X. megafurcula*, the dorsum of head and pronotum is dark reddish brown. Several species have a dorsolateral stripe running from the inner margin of the eye to the posterior margin of the pronotum, and in one species, *X. szechwanensis*, there are four stripes on the dorsum of the head, the two central ones uniting onto the fastigial cone. These constant color features in conjunction with the genitalic adaptations and the varying but constant length of the ovipositor should make the genus *Xiphidiopsis* a favorite among taxonomists.

In 1936 the writer surmised that practically every mountain range in south China had its indigenous species. In the present work seven new species have been described from Mount Omei, 11,000-foot sacred mountain of the Chinese in western Szechwan Province, and two other new species from another source come from that mountain. Even 9 species probably does not represent more than half of the *Xiphidiopsis* fauna of Mount Omei.

In 1933 Uvarov described the first species of the genus as *X. clavata* from southern Kansu Province, and in 1936 the writer described *X. hastaticercus* from Loh Fau Shan in central Kwangtung Province and recorded the Formosan *X. suzukii* for the first time from Hupeh Province in east-central China. In 1939 Ebner described *X. bituberculatus* from Chekiang Province, and in 1941 the writer added 5 new species mainly from Kiangsi and Chekiang to the China list. These came from the Heude Muesum in Shanghai. With the 12 new species described in the present paper, the number of Chinese species is raised to 21. An additional 14 species await description in material in the writer's collection. It is doubtful whether these 35 species represent more than half the number to be found in the Chinese fauna. In addition, there are at least 16 Malayan and 3 Philippine species of the genus described by Dr. H. H. Karny and Morgan Hebard.

KEY TO THE CHINESE SPECIES OF THE GENUS XIPHIDIOPSIS

MALES

1. Small brachypterous species----- 2
Small to large fully winged species----- 3
2. Color uniformly pale green; tegmina 2.7 mm.; cerci hastate in lateral outline, with internal basal uncinatc tooth----- *hastaticercus* Tinkham
Color green, with black on pleurites of thorax and abdomen; tegmina hidden under pronotum; cerci white, incurved with large internal basal tooth----- *grahami*, new species
3. Tegmina not surpassing apices of caudal femora; coloration mottled black; supraanal processes large, white, and strongly divergent; cerci very long and slender, black----- *pieli* Tinkham
Tegmina considerably surpassing apices of caudal femora; coloration foliage green in life, never mottled black----- 4
4. Supraanal plate transverse and entire, without trace of furcula----- 5
Supraanal plate with large or small paired processes----- 8
5. Dorsum of pronotum and head dark reddish brown to base of fastigial cone, which is pale green; tegmina with double row of infumate scattered spots apically; tympana dark; cerci simple, slightly spatulate in lateral outline----- *spatulata*, new species
Dorsum of head not solid brown to base of fastigial cone but pale, with or without stripes----- 6
6. Head with lateral stripe running from inner eye margin to posterior margin of pronotum----- 7
Head with 4 stripes, the 2 central ones converging onto dorsum of fastigial cone; tegmina unspotted; cerci short, slightly incurved, tufted with tawny hairs at internal base and apex----- *szechwanensis*, new species
7. Tegmina unspotted; cerci very long, slightly incurved distally, with small dorsal fin just beyond middle----- *capricercus* Tinkham
Tegmina spotted with single row of scattered dots; cerci short, incurved distally, with large, dorsal, median, finlike tooth----- *gurneyi*, new species
8. Paired supraanal processes short----- 9
Paired supraanal processes very large----- 12
9. Supraanal processes minute; cerci straight with apparently bifurcate apex in lateral profile----- *clavata* Uvarov
Supraanal processes small but prominently produced----- 10
10. Supraanal processes very broad, divergent, and partially fused at base; cerci very long, simple, and acuminate; size very large
Supraanal processes slender and parallel----- *kweichowensis*, new species
11. Size very large; supraanal processes widely spaced and decurved; apical portions of cerci with foliaceous flanges apically, the dorsal with retrorse acute base; caudal femora with knees dark----- *phyllocerca*, new species
Size small; supraanal processes moderately spaced and slightly decurved; cerci short, with incurved apex and large rectangular internal basal plates with acute angles----- *kulingensis* Tinkham
12. Paired processes straight or decurved----- 13
Paired processes bent down at right angles in apical third; cerci with many prongs resembling deer antlers----- *cervicercus* Tinkham
13. Supraanal processes flat and deeply cleft terminating in inward projecting tooth; cerci somewhat spatulate, not extending to apex of supraanal

processes, with an inferior, apical, dorsal-projecting, attenuate tooth and a large, internal, basal prong; size large, dorsum of head and pronotum dark reddish brown; knees of caudal femora pale

megafurcula, new species

Supraanal processes cylindrical, decurved, with acute bifurcate apices; cerci spatulate, with apex terminating in an extremely long, incurved, acute spur; tegmina with row of scattered dots; size medium large----- *suzukii* Matsumura and Shiraki

FEMALES

1. Small brachyterous species----- 2
Small to very large fully winged species----- 5
2. Color uniformly green----- 3
Color green with pleurites of thorax and abdomen brownish; tegmina whitish and hidden under pronotum; size very small, body length 6.0 mm. ovipositor 4.0 mm.; subgenital plate triangular----- *grahami*, new species
3. Ovipositor heavy, 5.0 mm. long, with greatest depth at middle 1.0 mm.; body heavy, subgenital plate circular----- *yachowensis*, new species
Ovipositor light, 5.0 mm. long, with greatest depth at base and 0.7 mm. broad in middle; body light----- 4
4. Tegmina 2.7 mm.; length to tip ovipositor 15.0 mm----- *hastaticercus* Tinkham
Tegmina 1.0 mm.; length to tip ovipositor 11.3 mm.; subgenital plate semi-circular with 3 keels and setae----- *minutus* Tinkham
5. Coloration green; tegmina extending well beyond apices of caudal femora; size large to small----- 6
Coloration mottled black, tegmina not extending far beyond apices of caudal femora----- *pieli* Tinkham
6. Subgenital plate present----- 7
Subgenital plate absent but replaced by 3 pairs of downward-projecting prongs; tegmina with a single row of scattered dots
suzukii Matsumura and Shiraki
7. Apex of ventral valvulae of ovipositor without teeth----- 9
Apex of ventral valvulae of ovipositor with 5 to 7 teeth----- 8
8. Head and pronotum dark brown; knees of caudal femora dark; size very large, ovipositor 11.5 mm----- *phyllocerca*, new species
Head and pronotum uniformly green and unstriped; knees pale; size medium, ovipositor 10.0 mm----- *emarginata*, new species
9. Eighth abdominal sternite just cephalad of subgenital plate specialized-- 10
Eighth abdominal sternite normal and of same size and form as sternites 2 to 7----- 12
10. Eighth abdominal sternite narrow, with parallel lateral margins and a deep right-angle incision in posterior margin, thus producing an acute bitoothed process, which is attached only at base; ovipositor 6.8 mm.
gurneyi, new species
Eighth abdominal sternite triangular or rhomboidal----- 11
11. Eighth abdominal sternite rhomboidal, posterior margin squarely truncate and very broad, with lateral margins converging forward; subgenital plate rectangular, with gently convex posterior margin; dorsum of head with 4 stripes, the two central uniting on fastigial cone
szechwanensis, new species
Eighth abdominal sternite triangular with apex directed cephalad and larger than remaining sternites; subgenital plate transverse and very broad, with fore and hind margins concave; ovipositor 9.0 mm.
transversa, new species

12. Dorsum of head almost or completely solid brown..... 13
 Dorsum of head pale, with or without a narrow stripe caudad of each eye.. 14
13. Dorsum of head solid brown; size large, ovipositor 9.5 mm.; subgenital plate narrowly triangular, with narrow truncate apex bearing median concave notch megafurcula, new species
 Dorsum of head reddish brown to base of fastigial cone, which is pale; tegmina with many scattered dots; size medium small, ovipositor 5.0 mm.
 spathulata, new species
14. Ovipositor very long, 13.0 mm.; head and pronotum unstriped; subgenital plate large, circularly rounded..... cervicercus Tinkham
 Ovipositor 10 mm. or less..... 15
15. Subgenital plate circular at base, with apex greatly produced into 2 long appendiculate processes; head and pronotum unstriped; size small, ovipositor 9.5 mm..... appendiculata, new species
 Subgenital plate without appendiculate process..... 16
16. Ovipositor 7.5 mm. long; size medium large..... sinensis, new species
 Ovipositor 9.5 to 10.0 mm. long..... 17
17. Size medium; head and pronotum with lateral stripe; subgenital plate small; transversely rectangular..... capricercus Tinkham
 Size small; pronotum only striped; subgenital plate of medium size with slightly concave truncate apex and with lateral constriction near base..... kulingensis Tinkham

XIPHIDIOPSIS YACHOWENSIS, new species

FIGURE 157, d

This small brachypterous species is distinguished from the two known brachypterous Chinese species, *X. hastaticercus* Tinkham, 1936, and *X. minutus* Tinkham, 1941, by its slightly larger size, much heavier build, and much broader ovipositor. In addition the ovipositor is less noticeably recurved than in those two species and the smaller tegmina are barely exposed from under the pronotum.

Holotype.—Female, near Yachow, Szechwan, western China, elevation 3,200–3,500 feet, August 29, 1930 (D. C. Graham). Measurements in millimeters: Body length 9.0; length to tip of ovipositor 14.0; pronotum 3.4; lateral length of tegmina 0.8; hindfemora 7.5 by 1.75; ovipositor 5.6 by 1.0. The unique type is U. S. N. M. No. 56293.

Description.—Size small, form of heavy build. Head broader than deep; eyes small, circular, slightly subglobose and widely separated by a distance two and one-half times the diameter of an eye. Vertex with a small bluntly conical prominence separating the large antennal scrobes. Pronotum not expanded on the metazona but of uniform breadth throughout, its length about two and one-half times its breadth. Dorsum of the pronotum flat with a shallow V-shaped suture just cephalad of center; dorsum angularly rounded into the shallow lateral lobes. Tegmina small, ovoid, its truncate rounded posterior margin only partly exposed from under the gently convex posterior margin of the pronotum. Leg spination as follows: Fore-

legs with forefemora unarmed; foretibiae with three pairs of small spines, the proximal pair about centrally placed beyond the tympanum, the apical pair minute. Middle legs with the mesofemora spineless but with a few short stiff bristles on the internal ventral keel; mesotibiae with five ventral pairs of small spines in the apical half. Caudal femora without teeth; caudal tibiae with 14-17 small external and 18-20 internal teeth on the dorsal keels; ventral keels spineless. *Supraanal plate very small, triangular; cerci short, slender, and conical. Ovipositor short, slightly recurved apically, its greatest depth about the middle. Subgenital plate triangular, with rounded truncate apex and gently convex sides, when viewed from the end scoop-shaped.

Coloration.—Unicolorous, bleached white by preservative, probably foliage green in life as common in the genus.

Remarks.—Nothing is known about the biology or habitat of this small species, which is known only from the type locality.

XIPHIDIOPSIS GRAHAMI, new species

FIGURE 157, a-c

This pretty little species is recognized in the male by its minute size, large pronotum, pale brownish coloration, and black sides, with the tegmina completely hidden under the pronotum. The female is distinguished from *X. yachowensis* by its smaller size, slighter build, narrower ovipositor, and the brownish markings on the pronotum; from *minutus* Tinkham by its hidden tegmina, markings on the pronotum, and less recurved ovipositor; and from *hastaticercus* Tinkham by smaller tegmina and the markings on the pronotum.

Holotype.—Male, Mount Omei, Shan Kai Si, Szechwan, western China, elevation 4,400 feet, August 6, 1929 (D. C. Graham). Measurements in millimeters: Body length 6.0; pronotum 3.7 by 1.8; hind-femora 7.0. U. S. N. M. No. 56292.

Description.—Size very small, head broader than deep, the greatest depth being at the level of the eyes. Eyes circular, prominently subglobular; vertex slightly greater than the diameter of an eye, with a small bluntly rounded fastigial cone. Pronotum large, very slightly broader on the metazona although appearing much broader because of the nature of the brown stripes on the dorsum of the pronotum. Posterior margin of the pronotum angularly rounded; the lateral lobes of the pronotum shallow. Tegmina small, completely hidden by the pronotum when viewed from above; the apical portions visible from the sides but not approximating the posterior margin of the pronotum. Leg spination as follows: Forelegs with forefemora unarmed; foretibiae with four pairs of long ventral spines. Middle legs with mesofemora unarmed; mesotibiae with five pairs of ventral

spines, the three proximal pairs the largest, the apical pair minute. Caudal femora unarmed on the inferior keels; caudal tibiae with 23–26 external and 26–28 internal black teeth on the dorsal keels, with the apical pair the largest; central keels unarmed. Cerci bifurcate, with a long, incurved outer arm and a much shorter straight internal basal prong. Subgenital plate small, triangular, with a minutely notched apex and two closely placed apical styli.

Coloration.—Head black above, paling below with the labrum and maxillary palpi whitish; occiput with trace of two narrow pale stripes converging forward. Pronotum with dorsum pale brownish margined posteriorly with dark brown broken stripes, which are narrowed in the anterior two-fifths. Lateral lobes black with a stripe of white, bordered on the posterior margin between the black of the lobes and the narrow brown dorsolateral stripes. The hidden tegmina are whitish. Thoracic pleurites black margined with whitish below. Abdomen pale brown above, pleurites black, lateroventral areas white, and sternites medium brown. Cerci white; subgenital plate blackish brown. Fore and middle legs pale brownish white; hindfemora pale, with muscular areas streaked with brown. Caudal tibiae very pale brown. Antennal scrobes and basal segments black, remainder of antennae whitish.

Allotype.—Female, same data as for the type but measurements as follows: Body length 6.0; length to tip of ovipositor 9.8; pronotum 4.2 by 1.9; hindfemora 8.6; ovipositor 4.0 mm. U.S.N.M. No. 56292.

Description.—Closely similar to the holotype in form and size. Leg spination as follows: Fore and middle legs as in the holotype; caudal femora unarmed; caudal tibiae with 28–30 external and 27–30 internal small black teeth, the apical pair much the largest. Ovipositor short, straight, and only very slightly recurved apically. Subgenital plate large and triangular with rounded apex.

Coloration.—Somewhat similar to the holotype but much paler. Head pale brownish, white below the kidney-brown eyes; vertex and occiput pale, with two median brown stripes converging forward to unite as one on the fastigial cone. A lateral stripe runs forward to the inner margin of each eye, then edging the inner margin of the antennal sockets. Antennal scrobe and first segment verona brown, remainder of the antennae testaceous. Dorsum of the pronotum as in the holotype but stripe slightly heavier especially on the metazona. Lateral lobes of the pronotum tinged with pale brown on the prozonal portion, the lower margin edged with dark brown. Pleurites of the abdomen pale brown, not much darker than the dorsum. Legs colored as in the holotype.

Paratype.—One male, same date as for the holotype. Measurements in millimeters: Body length 7.0; pronotum 4.0; hindfemur 7.0. A paratype deposited in the Tinkham collection. Coloration and features similar to holotype.

XIPHIDIOPSIS KWEICHOWENSIS, new species

FIGURE 157, *j*

This large, long-winged species is distinguished from other known Chinese species of the genus by its size and by the straight, simple, tapering cerci, which are slightly incurved at the tip. The subgenital plate is sharply triangular with subapical styli, and the supraanal plate bears a sharp bifurcate process.

Holotype.—Male, Shih Men Kan, Kweichow Province, western China, July 1934 (D. C. Graham). Measurements in millimeters: Body length 13.0; length 25.0 to tip of tegmina; pronotum 4.5; tegmina 20.8; hindfemur 11.7. The unique male is U.S.N.M. No. 56294.

Description.—Form typical of the genus. Coloration testaceous, in life uniformly foliage green. Eyes kidney brown. Vertex about one and one-half times the diameter of the eyes, which are circular and subglobular. Fastigial cone small and bluntly rounded. Pronotum with the posterior margin angularly rounded. Lateral lobes unusually deep, their depth about equal to the breadth of the prozona. Leg spination as follows: Forelegs with forefemora unarmed; foretibiae with five pairs of long spines. Middle legs with mesofemora unarmed; mesotibiae with six pairs of spines, the four proximal large, the two distal pairs small. Caudal femora unarmed on the inferior keels; caudal tibiae with 28–31 external and 28–32 internal black short teeth on the dorsal keels and 10 external and 3 internal apical pale ventral spines. Male supraanal plate transversed by a pair of median caudally projecting prongs, with their inner margins fused for two-thirds of their length, leaving the apical portions bifurcate. Cerci straight, cylindrical, rapidly tapering from a heavy base to the narrow slightly incurved apex. Subgenital plate triangular, with an acute apex below, subapical to which is a pair of minute styli, this feature being unique in the males of the known Chinese species. Only the unique male of this species is known.

XIPHIDIOPSIS PHYLLOCERCA, new species

FIGURE 157, *f, k*

A large and fully caudate species distinguished by the dark dorsum of the pronotum and the genicular areas of the caudal femora. The male cerci are peculiar in their leaflike form owing to the flanged enlargements especially developed on the internal apical margin of the cerci. The large size, dark dorsum of the pronotum and dark

genicular areas, and the small apical teeth on the ventral valvulae of the ovipositor will serve to distinguish the female from all other Chinese species.

Holotype.—Male, Kwanhsien, Szechwan, western China, July 12, 1930 (Hebard collection). Measurements in millimeters: Body length 12.0; length to tip of wings 26.0; pronotum 5.4 by 3.0; hind-femora 12.5. The type is deposited in the Hebard collection at the Academy of Natural Sciences of Philadelphia.

Description.—General form typical of the genus. Head about as broad as deep; eyes circular and subglobular. Vertex about one and three-quarters times the diameter of an eye. Fastigium with a small laterally compressed narrow cone, buttressed on each side by the flanged and raised inner margins of the antennal foveolae. Pronotum narrow on the prozona, considerably elevated and expanded on the metazona; the dorsum of the metazona slightly convex with traces of the lateral carinae; front of the metazona marked by a transverse sulcus. Seen in profile the plane of the prozona is considerably depressed below that of the metazona. Posterior margin of the pronotum broadly elliptical in outline. Lateral lobes slightly greater than the breadth of the prozona. Tegmina long and narrow, surpassing the apices of the caudal femora by two-thirds their length. Costal margin of the tegmina considerably expanded in the basal half; tympanal vein strongly developed. Wings very slightly longer than the tegmina. Leg spination as follows: Forelegs with forefemora unarmed and 6 external and 5 internal spines on the ventral margins of the foretibiae. Middle legs with mesofemora unarmed; mesotibiae with 6 external and 5 internal ventral spines. Caudal femora unarmed; caudal tibiae with 26–28 external and 28–32 internal teeth on the dorsal keels and 9–10 external and 3 internal apical spines on the ventral keels. Supraanal plate with two widely spaced short caudally projecting prongs. Cerci strongly cylindrical in the basal half; apical half sharply recurved with the upper margin flanged and elevated with the basal portion acutely produced proximally. Inner margin of apical half of cerci strongly flanged into an inward projecting plate. Subgenital plate narrow and deep, the apical portion lying normally between the bent arms of the cerci.

Coloration. General body color in life probably green, in the preserved specimen yellowish brown. Dorsum of head and pronotum dark reddish brown, paling on the posterior half of the metazona. Lateral margins of pronotum edged with piceous, these margins diverging from the prozona into the metazona; the area immediately below the dark margins whitish. Tympanal vein area of tegmen somewhat darkened. Genicular areas of the caudal femora and ex-

ternal bases of caudal tibiae very dark reddish brown. Eyes purplish gray. Antennae testaceous with widely spaced darkened joints.

Allotype.—Female, Kwanhsien, Szechwan, elevation 4,000 feet, October 13, 1934 (D. C. Graham). Measurements in millimeters: Body length, 15.0; length to tip of wings, 31.0; length to apex of ovipositor, 26.0; pronotum, 4.8; tegmina, 25.5; ovipositor, 11.0. U.S.N.M. No. 56295.

Description.—Size slightly larger than the holotype; head closely similar. Pronotum with the prozona broader than in the holotype, the constriction between the breadth of the prozona and metazona less than in the holotype; dorsal plane of metazona flatter and less elevated above that of the prozona than in type. Tegmina similar to type but costal margin and tegminal veins less developed. Fore and middle legs similar to the type. Caudal femora unarmed; caudal tibiae with 22–23 external and 24–26 internal teeth on the dorsal keels and 9–11 external and 3 internal small apical ventral spines. Ovipositor of moderate length and very slightly recurved. Ventral valvulae with 1 large and 6 minute subapical teeth; this feature separating this species in the female sex from all other females of the Chinese species. Subgenital plate broad with the posterior margin rounded and bearing a shallow median concavity.

Coloration.—Closely similar to the holotype but somewhat bleached by preservative fluid.

Paratypes.—One female, Mount Omei, Szechwan, altitude 4,500 feet, July 28, 1929 (D. C. Graham; Hebard collection). One female, Mount Omei, 4,400 feet, July 13, 1931 (D. C. Graham; Hebard collection). One female, Shin Kai Si, Mount Omei, 4,400 feet, August 4–6, 1929 (D. C. Graham; U.S.N.M.). One female, near Mupin, China, Szechwan, 2,000–2,800 feet, July, 1929 (D. C. Graham; U.S.N.M.). Range in measurements in millimeters: Body length 14.0–15.0; pronotum 4.5–4.8; tegmina 24.5–25.5; hindfemora 14.5–15.0; ovipositor 10.5–11.5. Paratypes similar to the allotype in coloration and features, and deposited in the United States National Museum, Hebard and Tinkham collections.

XIPHIDIOPSIS MEGAFURCULA, new species

FIGURE 157, *g*, 8

A moderately large, fully winged species distinguished from all other Chinese males of the genus by the very long, separated, dorso-ventrally flattened, furculalike processes of the supraanal plate and in the female by the long, narrowly triangular subgenital plate, the apex of which bears a minute triangular notch.

Holotype.—Male, Maan Chi Shan, Kwangtung, South China, X-XII, 1921 (C. W. Howard). Measurements in millimeters: Body length 14.0 to apex of supraanal process; length to tip of tegmina 20.5;

pronotum 3.8; length to wing tips 25.5; tegmina 17.0 by 1.5; hind femora 12.7. Holotype in the Hebard collection in Philadelphia.

Description.—A moderately large-sized species of slender build and yellowish coloration. Head narrow, its breadth less than depth. Eyes large, circular, and strongly subglobular, separated by a breadth one and one-half times an eye diameter. Fastigial cone very small and narrow projecting forward from between the antennal foveolae. Pronotum long and rather narrow, the metazone only a shade broader than the prozona; posterior margin broadly elliptical. Lateral lobes slightly deeper than the breadth of the prozona. Tegmina long and narrow, margins slightly subparallel, gently converging toward the apex. * Wings projecting about 5 mm. beyond the apex of the tegmina. Leg spination as follows: Forelegs with femora unarmed, foretibiae with 9 external and 7 internal spines, the proximal 6 largest and unpaired, the apical ones minute and paired. Middle legs with femora unarmed; mesotibiae with 7 external and 8 internal small spines. Caudal femora unarmed; caudal tibiae with 31–33 external and 31 internal yellow teeth on the dorsal keels and 10 or 11 external and 3 or 4 internal apical spines on the ventral keels. Supraanal plate enormously produced into two broad, dorsoventrally flattened, furculalike processes, separated by a space slightly less than the breadth of one of the processes; this cleft or space continuing to the very base of the plate. The apices of the supraanal processes are slightly deflexed and bear a conspicuous inward-projecting tooth. The cerci lie below and are shorter than the supraanal processes and in lateral profile appear somewhat spatulate, with the apical portions strongly incurved and bearing at their inferior apical angle a long upturned spine. Subgenital plate very small, roughly triangular with a pair of apical styli.

Coloration.—The nonalcoholic preserved type has a decided yellowish-brown cast, the caudal tibiae being definitely yellowish brown although the natural color may be greenish or yellowish. The dorsum of the head is dark reddish brown, this band continuing on the dorsum of the pronotum with only very slight broadening on the metazona; the band is parallel-sided on the prozona. Cells of the tegmina pale purplish brown, with the veins contrastingly pale. Wings partially infumate with purplish brown. Internal surface of basal antennal segment and fastigial cone piceous; remainder of the antennae very dark reddish brown. Eyes purplish brown or pale kidney brown. Remainder of the body, other than the dorsum of head and pronotum and the antennae, uniformly pale yellowish brown.

Allotype.—Female, same data as for the holotype. Measurements in millimeters: Body length 12.0; length to tip of tegmina 22.0; length to wing tips 28.0; length to tip of ovipositor 22.0; tegmina

18.5 by 1.6; pronotum 3.7 by 1.2; ovipositor 9.5. Allotype deposited in the Hebard collection.

Description.—Closely similar to the holotype in coloration but slightly larger. Leg spination similar. Ovipositor of medium length and only slightly recurved in the apical half. Subgenital plate contrastingly different from all the other female plates of known Chinese species, being isosceles-triangular in form with a narrowly truncate apex bearing a small median circular notch.

Male paratypes.—One, same data as for the holotype and measuring: Body length 12.5; length to tip of tegmina 20.0; length to wing tips 25.0; pronotum 3.6; tegmina 17.4; wing 20.0; hindfemora 12.6 mm. One, Szechwan, China, June–September 1934 (D. C. Graham; U. S. N. M.) and measuring: Body length 14.0; pronotum 3.6; length to tip of tegmina 20.5; length to wing tip 25.0 mm.; no legs on this specimen. One, Tseo Jia Geo, south of Suifu, 1,400–2,000 feet (D. C. Graham; U. S. N. M.); measurements: Body length 12.0; length to tip of tegmina 21.0; length to wing tips 25.5; pronotum 3.8 mm.; no caudal femora on this specimen.

Female paratypes.—Six, Tseo Jia Geo, south of Suifu, Szechwan, August 1929 (D. C. Graham). One, Chengtu, September 14–18, 1933, 1,700 feet (D. C. Graham; U.S.N.M.). One, Suifu, Szechwan, 1,000–2,000 feet, September 20, 1929 (D. C. Graham; U.S.N.M.). Two,

FIGURE 157.—NEW CHINESE SPECIES OF XIPHIDIOPSIS Redtenbacher

- a-c, *X. grahami*: a, Male, holotype, from Mount Omei, Szechwan, lateral view; b, dorsal view of right cercus of same; c, female, allotype, from same locality, ventral view of subgenital plate.
- d, *X. yachowensis*: Female, holotype, from near Yachow, Szechwan, ventral view of subgenital plate.
- e, *X. emarginata*: Female, holotype, from Tseo Jia Geo, south of Suifu, Szechwan, ventral view of subgenital plate.
- f, k, *X. phyllocerca*: f, Male, holotype, from Kwanhsien, Szechwan, lateral view of genitalia; k, female, allotype, from same locality, ventral view of subgenital plate.
- g, s, *X. megafurcula*: g, Male, holotype, from Maan Chi Shan, Kwangtung, lateral view of genitalia; s, female, allotype, from same locality, ventral view of subgenital plate.
- h, i, *X. spathulata*: h, Male, holotype, from Shin Kai Si, Mount Omei, Szechwan, lateral view of genitalia; i, female, allotype, from Tseo Jia Geo, south of Suifu, Szechwan, ventral view of genital plate.
- j, *X. kweichowensis*: Male, holotype, from Shih Men Kan, Kweichow, ventral view of genitalia.
- l-n, *X. gurneyi*: l, Male, holotype, from Mount Omei, Szechwan, lateral view of genitalia; m, dorsal view of left cercus of same; n, female, allotype, from Si Gi Pin, Szechwan, ventral view of subgenital plate and eighth abdominal sternite.
- o, *X. transversa*: Female, holotype, from Shin Kai Si, Mount Omei, Szechwan, ventral view of subgenital plate and eighth abdominal sternite.
- p-r, *X. szechwanensis*: p, Male, holotype, from Suifu, Szechwan, lateral view of genitalia; q, dorsal view of left cercus of same; r, female, allotype, from Shin Kai Si, Mount Omei, Szechwan, ventral view of subgenital plate.
- t, *X. appendiculata*: Female, holotype, from Tseo Jia Geo, south of Suifu, Szechwan, ventral view of subgenital plate.

Szechwan, September 1933–June 1934 (D. C. Graham; U.S.N.M.). Range in measurements in millimeters: Body length 10.0–11.0; length to tip of ovipositor 20.0–21.0; to tip of tegmen 21.0–22.0; to tip of wings 26.0–27.0; pronotum 3.3–3.5; tegmen 18.0–19.0; hindfemur 12.3; ovipositor 9.5 mm. Female paratypes identical to the allotype in coloration and features and deposited in the United States National Museum (No. 56296) and the Tinkham collection.

XIPHIDIOPSIS SUZUKII (Matsumura and Shiraki)

Teratura suzukii MATSUMURA and SHIRAKI, 1908, p. 48, pl. 1, fig. 4.

Teratura? suzukii TINKHAM, 1935, p. 213 (Hupeh).

Xiphidiopsis suzukii TINKHAM, 1941, p. ?.

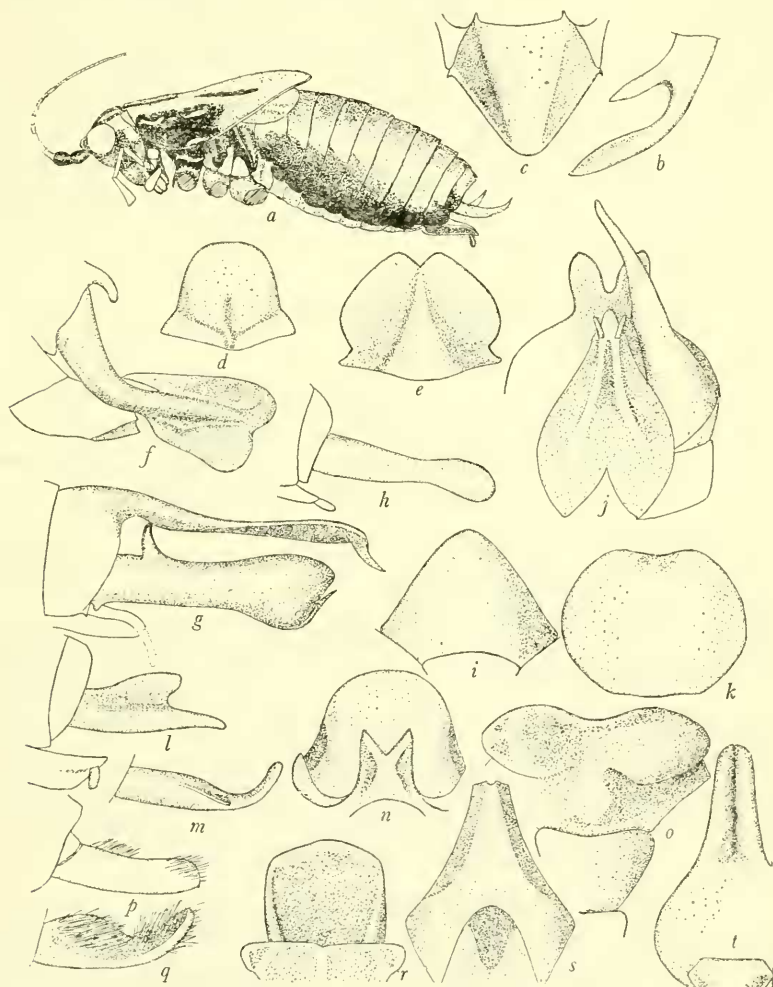


FIGURE 157.—For explanation see opposite page.

Described from Formosa in 1908, this species was first reported by the author from Hupeh Province in 1935. In 1941 additional specimens from the Heude Museum, Shanghai, were recorded from Shanghai and Ihing, Kiangsu Province.

An additional female from Suifu, Szechwan, western China, altitude 1,000 to 1,500 feet, collected by Dr. D. C. Graham, "10, 1930" (probably meaning October 1930), represents the first record of this widely distributed species from western China.

The female of *suzukii* is recognized by its pale green coloration in life (pale brown when preserved), with a few fine dots scattered over the central portion of the tegmina. The ovipositor is short, very gently recurved, with three pairs of downward-projecting prongs at the ventral base of the ovipositor. One pair belongs to the eighth abdominal sternite; the middle pair represents the specialization of the ninth abdominal sternite; and the third and caudal pair pertains to the external basal portion of the ventral valvulae. This character of the three pairs of prongs situated at the ventral base of the ovipositor quickly separates the females of *suzukii* from the females of all other Chinese species described and undescribed. The male of *suzukii* is also quickly recognized by the bizarre form of the supraanal plate and cerci of its genitalia.

XIPHIDIOPSIS SZECHWANENSIS, new species

FIGURE 157, p-r

A spotted-winged species distinguished from the spotted-winged *X. suzukii* and other fully winged species by the fastigial cone streaked with brown and the four brown stripes on the dorsum of the occiput. The male supraanal plate is entire, squarely transverse, and the cerci are simple, heavy with tufts of tawny hair near the apex and the internal base, which characters will serve to distinguish this species. The female subgenital plate is small, quadrate, with the sternite cephalad narrow and broadly transverse, rhomboid in outline, with the lateral margins converging strongly cephalad, a character not possessed by other females of the genus. Nearest relationship appears to be with *X. cyclolabia* Karny, 1923, from Malaya.

Holotype.—Male, Suifu, Szechwan, altitude 1,000 feet, October 15–17, 1929 (D. C. Graham). Measurements in millimeters: Body length to tip of cercus 9.7; length to tip of tegmina 22.0; pronotum 4.0 by 1.7; tegmina 1.5 by 2.0; hindfemora 11.2; cercus 1.5. U. S. N. M. No. 56298.

Description.—Size medium and form typical of the genus. Head broader than deep; eyes large, ovalish, subglobular. Vertex about one and one-half times the lateral diameter of an eye as seen from above. Foremargin of the pronotum slightly convex; posterior margin

strongly hyperbolic or angularly rounded. Metazona not broader than the prozona; its length slightly less than the length of the prozona. In profile metazona raised slightly above the plane of the prozona. Lateral lobes of the pronotum slightly broader than deep. Tegmina and wings extending considerably beyond the apices of the caudal femora. Leg spination as follows: Forelegs with forefemora unarmed; foretibiae with four large pairs of spines beyond the tympana and two small apical external spines; tympana with both faces apert. Middle legs with mesofemora unarmed; mesotibiae with four large and two small apical external spines and two large subapical spines and one small apical internal spine. Caudal femora unarmed; caudal tibiae not complete but probably closely similar in spination to that of the allotype, description of which is to follow. Supraanal plate entire, squarely truncate; cerci short and heavy at base with the apical half gently incurved with internal apical surface excavate. Tufts of tawny hairs clothe the internal basal half and the apical region of the cercus. Subgenital plate rather large with long truncate apex bearing long lateral, widely separated, subapical styli.

Coloration.—Testaceous in preserved alcoholic specimens but foliage green in life, with a few large infumate spots in a row in the basal half and scattered roughly in two rows in the apical portions. Pronotum with a band of brown occupying two-thirds of the dorsum with the margins darker; the band somewhat constricted medianly. Dorsum of head with the fastigial cone streaked with dark brown, which divides into two narrow dark brown stripes crossing the occiput and laterad with another dark brown stripe on each side extending from the inner margin of the eye to the posterior margin of the occiput; these four stripes on the dorsum of the head quickly identify this species.

Allotype.—Female, Shin Kai Si, Mount Omei, Szechwan, 4,400 feet, August 4-6, 1929 (D. C. Graham). Measurements in millimeters: Body length 9.5; length to apex of tegmen 22.0; length to apex of wings 23.0; pronotum 3.8; tegmen 19.0 by 2.0; ovipositor 8.5. U.S.N.M. No. 56298.

Description.—Closely similar to the holotype in size and coloration. Leg spination as follows: Forelegs with forefemora unarmed; foretibiae with four large pairs of spines and two external and small apical spines. Middle legs with mesofemora unarmed; mesotibiae with five pairs of spines, the basal largest and an additional basal external spine. Caudal femora unarmed; caudal tibiae with 31-33 external and 32 or 33 internal short dorsal teeth, the distal ones largest and 8 or 9 external and four internal ventral spines. Ovipositor moderately long, gently recurved apically. Subgenital plate quadrate, with parallel and rolled lateral margins and convex posterior margin. Sternite cephalad of the subgenital plate, rhomboid, with the posterior

margin squarely truncate and much broader than the subgenital plate and rest of the abdominal sternites; the lateral margins converging strongly cephalad as shown in figure 157, *v*.

Paratype.—One male, Mount Omei, Szechwan, 11,000 feet; August 19, 1934 (D. C. Graham: U.S.N.M.). Measurements in millimeters: Body length 9.5; hindfemora 11.0; pronotum 4.0; tegmina with apex missing. Paratype in the Tinkham collection. Closely similar to the holotype in size, form, and coloration.

XIPHIDIOPSIS SPATHULATA, new species

FIGURE 157, *h, i*

A small species, with spotted tegmina, dorsum of pronotum dark brown, and occiput of head dark brown except for the pale-colored fastigial cone and darkened tympana, these being features that are quite distinctive. The male cerci are long, simple, and spathulate, and the female ovipositor is short, more recurved than usual, with triangular subgenital plate. Nearest relationships appear to be with *X. szechwanensis* Tinkham.

Holotype.—Male, Shin Kai Si, Mount Omei, Szechwan, altitude 4,400 feet, July 1929 (D. C. Graham). Measurements in millimeters: Body length 7.3; length to tip cerci 9.0; pronotum 3.0; length to tip of tegmina 17.0; tegmina 14.0; cercus 1.7; hindfemora 8.4. U.S.N.M. No. 56297.

Description.—Size rather small and form typical of genus. Head much broader than deep; eyes subcircular and subglobular; fastigial cone prominent. Pronotum with foremargin slightly convex; posterior margin broadly angularly rounded. Prozona slightly broader than the metazona; lateral lobes broader than deep. Tegmina and wings extending considerably beyond the apices of the caudal femora. Leg spination as follows: Forelegs with forefemora unarmed; foretibiae with four pairs of large spines between the tympana and the apical third. Middle legs with mesofemora unarmed; mesotibiae with four pairs of long spines and one small external apical spine. Caudal femora unarmed; caudal tibiae with 31–33 external and 32 internal dorsal teeth and 4–7 external and 3 internal apical ventral spines. Genitalia with supraanal plate squarely truncate and entire; cerci long, simple, heavy at base, with apical half slightly spathulate and gently incurved, the inner surface of the apical half excavate. Subgenital plate very small; posterior margin squarely truncate, with widely spaced submarginal styli.

Coloration.—Testaceous in the preserved specimen: foliage green in the living specimen, with the dorsum of the pronotum possessing a median band of dark brown extending onto the head as far as the base of the fastigial cone; eyes dark brown. Fastigial cone green in

life; tympanal areas of foretibiae piceous. The dark color of the dorsum of the head caudad of the fastigial cone and the darkened tympanal areas serve immediately to separate this species from others. Median area of tegmina with a few scattered infumate spots and stridulating field and anal margin areas reddish tinged where the margins are attinent; wings slightly infumate.

Allotype.—Female, Tseo Jia Geo, south of Suifu, Szechwan, 1,400–2,000 feet (D. C. Graham). Measurements in millimeters: Body length 8.5; length to tip of tegmina 20.0; length to wing tips 21.5; length to tip of ovipositor 14.0; pronotum 3.5; tegmina 17.5 by 1.8; ovipositor 5.0 mm. The hindfemora are missing in the allotype. U.S.N.M. No. 56297.

Description.—Similar in form, size, and coloration to the holotype. Leg spination as follows: Forelegs with forefemora unarmed; foretibiae with four large pairs of spines and one external apical small spine. Middle legs with mesofemora unarmed; mesotibiae with five external and four internal large spines. Hindlegs missing in allotype and female paratype but probably similar to the spination in the holotype. Ovipositor short, moderately stout, and moderately recurved in the apical half. Subgenital plate large and roundly triangular.

Paratype.—One female, Kuanshien, Szechwan, August 1–4, 1934 (D. C. Graham; U.S.N.M.). Measurements in millimeters: Body length 9.0; length to tip ovipositor 14.0; length to wing tips 21.5; length to tegminal tips 20.5; tegmina 17.0; pronotum 3.4; ovipositor 5.0. Hindfemora missing. Deposited in the Tinkham collection. Paratype identical to the allotype.

XIPHIDIOPSIS GURNEYI, new species

FIGURE 157, 1–n

A small species recognized by the squarely truncate and entire supraanal plate, by the short simple incurved cerci bearing a median dorsal fin, and by the diacritical bipronged eighth abdominal sternite lying just cephalad of the large and somewhat rounded subgenital plate. The male appears to be most nearly related to *X. capricercus* Tinkham.

Holotype.—Male, Mount Omei, Baian-Kara-Ula Range, Szechwan, altitude 4,500 feet, July 26, 1929 (D. C. Graham). Measurements in millimeters: Body length 10.0; length to cercus tip 11.5; length to tip of tegmina 17.5; length to wing tips 19.0; pronotum 3.2 by 2.3; hindfemora 8.0. Deposited in the Hebard collection in Philadelphia.

Description.—Size small and form typical of genus. Head not much broader than deep, eyes subcircular and subglobular. Pronotum with foremargin gently convex; posterior margin hyperbolically

rounded. Tegmina and wings extending considerably beyond the apices of the caudal femora. Leg spination as follows: Forelegs with forefemora unarmed; foretibiae with four large pairs of spines and one minute apical pair. Middle legs with mesofemora unarmed; mesotibiae with four large and two minute apical external spines and three large and two minute apical internal spines. Caudal femora unarmed; caudal tibiae with 29–32 short black external and 26–29 black internal dorsal teeth and 9–11 external and 3 internal apical small spines. Supraanal plate transverse and entire. Cerci short, heavy in the basal two-thirds, with the apical third incurved; the cerci bear a median dorsal finlike tooth that characterizes the species. Subgenital plate of moderate size, longer than broad, with parallel lateral margins and moderately convex posterior margin with two small, lateral, widely spaced marginal styli.

Coloration.—Uniformly foliage green in life, with a narrow lateral brown stripe on the margins of the pronotum and a trace of a stripe at the posterior angles of the eye not extending to the posterior margin of the head. Fastigial cone with a pale brown dorsal stripe; rest of head green. Dorsum of pronotum between the lateral stripes brownish yellow. Tibial teeth of hindlegs black.

Allotype.—Female, Si Gi Pin, Szechwan, 6,000–7,000 feet, August 8, 1929 (D. C. Graham). Measurements in millimeters: Body length 10.0; length to apex of ovipositor 17.0; length to wing tips 21.0; length to tegmen tips 20.0; pronotum 3.0; hindfemora 10.0; ovipositor 6.8. U.S.N.M. No. 56299.

Description.—Closely similar to the holotype in size, form, and coloration. Leg spination as follows: Forelegs with forefemora unarmed; foretibiae with six external spines, the four basal the largest, and four large internal and one pair of minute apical spines. Middle legs with mesofemora unarmed; mesotibiae with six external and five internal spines, the four basal the largest. Caudal femora unarmed; caudal tibiae with 25–28 external and 26–29 internal short black dorsal teeth and 8 or 9 external and 3 or 4 internal pale ventral spines. Ovipositor moderately short, heavy, and moderately recurved apically. Subgenital plate with moderately convex posterior margin and lateral margins divergent to their broad base. Eighth abdominal sternite, just cephalad of the subgenital plate with subparallel lateral margins, the apex deeply notched by a right-angle incision as shown in figure 157, *n*. This character serves to readily distinguish *X. gurneyi* from the known females of the Chinese species.

Male paratypes.—One, Shin Kai Si, Mount Omei, Szechwan, 4,400 feet, July 1–17, 1922 (D. C. Graham; U.S.N.M.). One, south of Suifu, Szechwan, September 6, 1929 (D. C. Graham; U.S.N.M.). One, Shin Kai Si, Mount Omei, August 7, 1929 (D. C. Graham; U.S.N.M.).

Two, Mount Omei, Baian-Kara-Ula Range, Szechwan, 4,500 feet, August 14–15, 1929 (D. C. Graham; Hebard Collection). One, Si Gi Pin, Szechwan, August 8, 1929 (D. C. Graham; U.S.N.M.). Range in measurements in millimeters: Body length 8.5–9.5; pronotum 3.2–3.4; length to wing tips 18.0–19.5; tegmina 15.5–17.0; hindfemora 8.5 mm. Male paratypes identical to the holotype in every respect.

Female paratype.—One, Mount Omei, 11,000 feet, August 19, 1934 (D. C. Graham; U. S. N. M.). Measurements in millimeters: Body length 9.0; length to wing tips 21.0; pronotum 3.3; hindfemur 9.0; ovipositor 6.5. Identical to the allotype. Paratypes deposited in the United States National Museum, Hebard, and Tinkham collections.

This species is named in honor of Dr. A. B. Gurney, of the U. S. Bureau of Entomology and Plant Quarantine, who has kindly arranged the loan of the specimens of *Xiphidiopsis* belonging to the U. S. National Museum.

XIPHIDIOPSIS APPENDICULATA, new species

FIGURE 157, *t*

This medium-sized species, known only in the female sex, is recognized by its uniform green coloration, without markings of any sort, the rather long and slender ovipositor, and the triangular subgenital plate with the apex produced into a narrow appendiculate process.

Holotype.—Female, Tseo Jia Geo, south of Suifu, Szechwan, altitude 1,400–2,000 feet, August 1929 (D. C. Graham). Measurements in millimeters: Body length 8.5; length to tip of ovipositor 17.0; length to wing tips 20.5; length to tip of tegmina 19.5; pronotum 3.5; tegmen 17.8; ovipositor 9.5. U. S. N. M. No. 56300.

Description.—Size medium and form typical of the genus. Head broader than deep; eyes subcircular and subglobular. Pronotum with the foremargin gently convex; posterior margin hyperbolically rounded; lateral lobes broader than deep. Tegmina and wings reaching far beyond the apices of the caudal femora but little beyond the tip of the ovipositor. Leg spination as follows: Forelegs with forefemora unarmed; foretibiae with four pairs of long infumate spines beyond the tympana, the internal ones the largest. Middle legs with mesofemora unarmed; mesotibiae with four external and three internal large spines and two minute apical pairs of spines. Caudal femora unarmed; caudal tibiae with 27 external and internal small black dorsal teeth and 7 external and 3 internal apical small ventral spines. Ovipositor long and practically straight, with only a slight reflexion apically. Subgenital plate circularly rounded, with the apical area extended into an appendiculate process as shown in figure 157, *t*. Pleurites of the ninth abdominal segment with posterior margins strengthened but not confluent below.

Coloration.—Uniformly pale foliage green in life, testaceous when poorly preserved. Spines of the foretibiae somewhat infumate as is also the drum of the tympanum.

Paratype.—One female, Beh Luh Din, 30 miles north of Chengtu, Szechwan, 6,000 feet, September 20–28, 1934 (D. C. Graham; U. S. N. M.). Measurements in millimeters: Body length 10.0; length to tip of tegmina 19.5; length to wing tips 20.0; pronotum 3.2; hindfemora 9.0; ovipositor 8.0. Closely similar to the holotype and deposited in the Tinkham collection.

XIPHIDIOPSIS SINENSIS, new species

A moderately large species, known only in the female sex, that is recognized by its uniform coloration, narrow lateral stripes on the pronotum extending to the inner angle of the eyes, rounded subgenital plate, and constricted eighth abdominal sternite. These characters separate this new species from *X. gurneyi* and other known species. Relationships, until the male is discovered, are uncertain.

Holotype.—Female, Shin Kai Si, Mount Omei, Szechwan, 4,400 feet, August 20, 1934 (D. C. Graham). Measurements in millimeters: Body length 9.5; length to ovipositor tip 17.0; length to wing tips 26.0; length to tips of tegmina 25.0; pronotum 4.0 by 2.0; hindfemora 11.5; ovipositor 7.5. U. S. N. M. No. 56303.

Description.—Size moderately large and form typical of the genus. Head broader than deep; eyes subcircular and subglobular. Dorsum of the pronotum rather broad; anterior margin gently convex; posterior margin hyperbolically rounded; lateral lobes broader than deep. Tegmina and wings far surpassing the apices of the caudal femora and tip of the ovipositor. Leg spination as follows: Forelegs with forefemora unarmed; foretibiae with five pairs of very large spines and a minute apical pair. Middle legs with mesofemora unarmed; mesotibiae with five smaller pairs of spines and a minute apical pair. Caudal femora unarmed; caudal tibiae with 30 or 31 external and 28–30 internal short dorsal teeth and 12 external and 3 internal apical ventral spines. Ovipositor short, heavy, moderately recurved in the apical half, 7.3 mm. long. Subgenital plate moderately large and broadly rounded. Eighth abdominal sternite constricted in the center to hourglass shape.

Coloration.—Testaceous, foliage green in life, with dark brown lateral stripes running from the inner margin of the eye to the posterior margin of the pronotum, the dorsal areas of the pronotum between the stripes yellow-brown.

Paratypes.—Three females, near Mupin, Szechwan, July 1929 (D. C. Graham; U. S. N. M.). One female, Shin Kai Si, Mount Omei, Szechwan, 4,400 feet, August 4–6, 1929 (D. C. Graham; U. S. N. M.). One female, Mount Omei, Baian-Kara-Ula Range, 4,500 feet, August

6, 1929 (D. C. Graham; Hebard collection). Range in measurements in millimeters: Body length 11.0–13.0; pronotum 4.0; length to tip of ovipositor 18.0–19.8; length to wing tips 24.0–25.4; hind femora 10.5–10.8; ovipositor 7.0. Paratypes identical to the holotype and deposited in the United States National Museum, Hebard, and Tinkham collections.

XIPHIDIOPSIS TRANSVERSA, new species

FIGURE 157, ♂

A medium-large species, known only in the female and quickly recognized among the females of all the known species by the very broad and transverse subgenital plate, with the eighth abdominal sternite specialized and enlarged, triangular in form with the apex directed cephalad. The species is not large enough to be the female of *X. kweichowensis* and in addition possesses dorsolateral stripes on the pronotum.

Holotype.—Female, Shin Kai Si, Mount Omei, Szechwan, 4,500 feet (D. C. Graham). Measurements in millimeters: Body length 10.5; length to ovipositor tip 20.5; length to tegmen tip approximately 25.0 (tip frayed); pronotum 4.0 by 2.0; tegmen approximately 21.5 by 2.8; caudal femur 11.6; ovipositor 9.7. U.S.N.M. No. 56301.

Description.—Size fairly large and form typical of the genus. Head slightly broader than deep; eyes subcircular and subglobular. Fastigial cone prominent, with slight upward tilt. Pronotum with foremargin very slightly convex; posterior margin somewhat circularly rounded; lateral lobes much broader than deep. Leg spination as follows: Foreleg with forefemur unarmed; foretibiae with five external and five internal infumate spines, of which the proximal is small and dorsad of tympanum, the remainder much larger than the external ones. Middle legs missing. Caudal femur unarmed; caudal tibiae with 31 external and internal short black dorsal teeth and 9 external and 3 internal apical small spines. Tegmina and wings far surpassing apex of caudal femur. Ovipositor long and slender, very slightly recurved, with apex considerably passing knee of caudal femur. Subgenital plate very broad and transverse, lateral margins strongly convex, posterior margin gently concave and slightly deflexed. Anterior margin fused to a short base making somewhat of a T joint. Eighth abdominal sternite larger than remaining abdominal sternites, triangular, with truncate posterior margin and apex directed cephalad.

Coloration.—Foliage green in life, testaceous in death, with a slight dorsolateral stripe of brown on the dorsum of the pronotum.

The type is unique, and the species is named from the very broad and transverse nature of the subgenital plate.

XIPHIDIOPSIS EMARGINATA, new species

FIGURE 157, c

A medium-sized species, known only in the female sex and distinguished from all other species of the genus by its large and emarginated subgenital plate and the long straight ovipositor, with the tip of the ventral valvulae bearing about five distinct teeth. This character separates it immediately from all females of the Chinese species except *X. phyllocerca*, which is very large, with the head and pronotum dark reddish brown.

Holotype.—Female, Tseo Jia Geo, south of Suifu, Szechwan, western China, August 1929 (D. C. Graham). Measurements in millimeters: Body length 9.0; length to ovipositor tip 19.0; length to apex of tegmen 21.0; pronotum 3.5 by 1.9; tegmen 18.0 by 2.0; hindfemur 10.0; ovipositor 10.0. U.S.N.M. No. 56302.

Description.—Size medium and form typical of the genus. Head slightly broader than deep; eyes subcircular and subglobular. Fastigial cone slightly below the upper margins of the eyes. Pronotum with the anterior margin very slightly convex; posterior margin angularly rounded; lateral lobes much broader than deep. Tegmina and wings considerably surpassing apices of caudal femora but extending very slightly beyond the apex of the ovipositor. Leg spination as follows: Forelegs with forefemora unarmed; foretibiae with five external and four internal spines. Middle legs with mesofemora unarmed; mesotibiae with six external and four internal spines. Caudal femora unarmed; caudal tibiae with 27 external and 31 internal small black dorsal teeth and nine external and one internal very pale small apical spines. Ovipositor very long and straight, with very slight reflexion in the distal fourth; ventral valvulae with five small distinct teeth at the extreme apex. Subgenital plate very large, semicircularly rounded, with a distinct triangular apical incision and a slight emargination near each lateral base.

Coloration.—Uniformly foliage green in life, uniformly testaceous in the preserved specimen. The species is known from only the unique type.